

Appl. No. 10/617,548
Amdt. Dated February 14, 2006
Reply to Office action of 11/14/2005

REMARKS/ARGUMENTS

In the office action dated 14 November 2005, the Examiner rejected Claims 1 and 4-22. Claims 2 and 3 are allowed and claim 4 is objected to. Claim 4 is amended and Claim 20 is cancelled in this amendment. The Applicants respectfully request reconsideration of the application by the Examiner in light of the following remarks. Claims 1-19 and 21-22 remain pending in this application.

Claim Objection

Claim 4 has been objected to and claim 4 is amended to use standard Markush language as suggested by the Examiner. The Applicants respectfully request that the Examiner withdraw the objection in view of the introduction of Markush language in Claim 4.

Rejections under 35 U. S. C 102 (e)

Claim 20 has been rejected as being anticipated by Lyons et al., U.S Patent 6,793,910 (hereinafter Lyons). Claim 20 has been cancelled in this amendment.

Rejections under 35 U. S. C 103 (a)

Claims 1, 4, 8-11 and 14-21 have been rejected as unpatentable over Lyons et al., U.S Patent 6,793,910 (hereinafter Lyons). Applicants respectfully traverse the rejection.

Lyons et al. disclose an apparatus for producing a synthesis gas using air, steam and hydrocarbon as reactants in a non-constant volume reactor. The reforming reactions involved in the process are listed in Chart 1, Col. 3, which include combustion reactions to produce water and generate heat and steam reforming reactions to produce Hydrogen.

In contrary, claims 1, 10 and 21 in the present application recite a system and method of producing hydrogen, which do not involve any combustion reaction. The process described in claims 1, 10 and 21 does not involve any combustion step, which is necessary for the process described by Lyons. The examiner has pointed out in page 4 of the office action that Lyons conducts the reformation with minimal amount of combustion (col. 3, lines 29-35). Although Lyons reports that the amount of oxygen that is fed to the reactor is limited, so that the oxygen mass balance inhibit combustion reactions, the combustion step even if in a limited manner is essential for the success of the process described by Lyons.

As per MPEP 2143.02 "The prior art can be modified or combined to reject claims as prima facie obvious as long as there is a reasonable expectation of success". Lyons does not suggest any improvement/modification or operation of the reforming system by totally eliminating the combustion step. As the process described by Lyons is adiabatic (no heat supplied from outside), the limited combustion is expected to play a very important role in the entire reforming process as the steam methane reforming reaction is endothermic.

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Therefore, the Applicants respectfully submit that the examiner has failed to establish a *prima facie* case of obviousness and claims 1, 10 and 21 are patentably distinct from the applied references for the reasons discussed above. Claims 4, 8-9, 11, 14-19 depend directly or indirectly from claims 1 or 10. Therefore claims 4, 8-9, 11, 14-19 are similarly allowable over the applied references.

Claim 1 and 4-22 have been rejected as unpatentable over Lyons et al., U.S Patent 6,793,910 (hereinafter Lyons) as applied to claims 1, 4, 8-11 and 14-21 above and further in view of Kesker et al., U.S Patent 6,066,307 (herein after Kesker). Applicant respectfully traverses the rejection.

As discussed above, claims 1, 10 and 21 are patentably distinct from the applied references for the reasons discussed above. Claims 4, 6-9, 11-19 and 22 depend directly or indirectly from claims 1, 10 or 21. Therefore claims 4, 6-9, 11-19 and 22 are similarly allowable over the applied references.

Allowable subject matter

Claims 2-3 are allowed. Applicant's would like to thank the Examiner for the allowance of the indicate claims. In light of the remarks above, Applicant's believe that all of the current claims are in a condition for allowance.

Summary

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Should the Examiner believe that anything further is needed to place the application in even better condition for allowance, the Examiner is requested to contact applicant's undersigned representative at the telephone number below.

Respectfully submitted,

By 

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